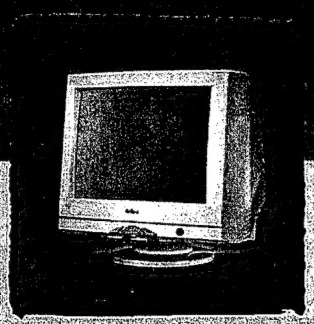
Belinea



Color Monitor
Service Manual

[10 60 65]

106065 Service Manual

Contents

General Specification

Model number	Belinea 106065
CRT (dot pitch)	19" 0.26 mm (18.2" viewable)
Scanning Frequency	Hor. 30 – 96KHz Vert. 50 – 160Hz
Video Pixel Frequency	150MHz
Input Signal	Video : Analog 0.7Vp-p Sync. : TTL (positive / negative)
Signal connector	15 pins D-Sub
Maximum Resolution	1600 X 1200 (NI)
Recommend Resolution	1280 X 1024/ 85Hz
User Control	Contrast, Brightness, Rotation, H – Size / Position, V – Height / Center, E –W Pin / Trapezoid, Pin-Balance / Parallel, Top/ Bottom Corner,
Color Management	2 preset modes *9300K for general use *6500K for image 1 user mode * R / G / B Gain for user preset
Specials OSD	OSD position, OSD language, Recall, Degauss, H / V Moiré, Power Saving, System Status
Display Area	350X 262 mm^2(default)

	Belinea 106065		
User Mode	14		
Preset Mode	11		
DDC	VESA DDC1 & DDC2B		
Power Source	AC 100V to 240V, 50 / 60 Hz		
Power Consumption	130 Watts maximum		
Regulatory	UL, C-UL, TUV/ GS		
EMI Emission	FCC(Doc), EN55022B, EN61000-3-2, EN61000-3-3, MPRII 1990-10, TCO'99 Gost.		
Ergonomics	EN29241-3 / -7 / -8, ZHI618 and TCO'99		
EMS	EN55024		
Power Management	VESA, Nutek, EPA, TCO'99 and E2000		
Optimum Using Condition	Operating : $0^0 - 35^0$C Storage : -20^0 - 60^0C Humidity : 10 – 90 % Altitude: 1000Ft		
Removable Tilt Swivel Base	Tilt : -5 – 11 degrees Swivel : ±60 degrees		
Weight (Kg)	Net. :TBD Gross: TBD	Net: TBD Gross: TBD	Net: TBD Gross: TBD
Dimension (W x H x D)	Physical : TBD Package : TBD	Physical : TBD Package : TBD	Physical : TBD Package : TBD
DY Information	LH : 106 +/- 3%uH, RH :0.204 +/- 7% Ω LV : 5.45 +/- 7%mH, RV : 7.55 +/-5% Ω		

Circuit Description

Video Amplifier

The video amplifier module is composed of three amplifiers for red, green, gain control and dc restoration. The video input signal is fed to the video preamplifier IC201 through AC coupling capacitor C204, C205 and C206. And it is fed to the R, G, B, driver IC204 for amplify to 45Vp-p to drive the cathode of CRT. The L205, L206 and L207 are series peaking inductors, which improve the video frequency response. The IC204 is controlled by IC601 I^2C bus to IC202 (pin7, pin8). The clamping pulse comes from IC501 pin16 to IC201 pin 5 and fast blanking pulse comes from pin12 of IC202 to IC201 pin1, that is used to cut off the R, G, and B signals while the OSD generator display characters or windows.
The OSD signal is input from IC202 output (pin13, pin14 and pin15) and connector to mixer circuit of IC201 pin2, pin3 and pin4.

Bias Control

All the DC control voltage coming from IC601 micro controller via a I^2C bus pin 9, pin 10. The IC201 DAC output from pin 17, 20, 23 for R.G. B. cut off controller.

Brightness (G1) Control

Brightness (G1) is controlled by IC601 pin 1, 3. The Q516 is G1 control circuit by varying DC voltage of "Emitter" of Q516 and the "Emitter" varying voltage of Q206 will control cathode dc level to control brightness.

Auto Beam Current Limit

When beam current is over 900uA, the voltage build at "Base" of Q601 will be low enough to hold maximum beam current, then the voltage of pin24 of IC201 will be pulled down accordingly to reduce the video preamplifier gain output.

Blanking Circuit

The IC401 pin 8 can get a positive fly back pulse normally, which just can used as a positive blanking pulse to eliminate the vertical blanking on the screen. The positive fly back pulse will be amplified and reversed via Q518, then a negative pulse will be created from Q518 collector. The negative pulse will be coupled to G1 through C547. While mode change, IC601 pin17 will be pull low to turn off Q517 and Q516, the G1 voltage will be down to –150 Volts, then the CRT will cut off the Brightness output.

Over Beam Current Protector

Over current protector of FBT second side consists of Q522, ZD502, D528, R515, R516, R521,R511, R512, C508 and IC501. When the current in the secondly winding of FBT increases abnormally, the voltage of FBT pin7 decreases. And when the voltage becomes about 0 volts, ZD502 and Q522 turn on. Therefore protector circuit in IC501 pin2 turn on.

X - Ray protector

The X – Ray protector consists of D502, ZD501, R511, R512, R513, R514, C508, C509 and IC501. The X – Ray is detected by the pin5 volts of FBT, whose pulse increase as H.V increases. D502 and C509 rectify the output pulse at FBT pin5. That is divided by R514, R513 and ZD501 is reversed biased and conducts. Thereby turning on IC501 pin2 protect circuit. When this voltage divided voltage exceeds the voltage at ZD501, R512 and R511. IC501's pin 2 becomes active when it is input voltage exceeds 6.20 volts. This protect circuit is active and will remain active until the power supply voltage decreases. When this circuit is active, the pin8 of IC501 horizontal pulse stop and high voltage decreases to 0 volts.

Rotation Circuit

The rotation circuit is operated a volt difference on rotation coil. The IC601 pin 38 output 0 – 5 volts to IC502 pin9 to control the volts amplitude and polarity on IC502, The pin 8 output of IC502via Q101, Q102 to drive rotation coil.

Deflection Processor

The horizontal synchronization processor is integrated of TDA4856. It used a dual phase locked loop (PLL1 and PLL2) design. This operation ensures a smooth tuning and avoids fast changes of horizontal frequency during catching. The processor can synchronize with the input synchronize up to triple of free run frequency which determined by R517, R518 and C512.

The horizontal phase locked loop (PLL) consists of an oscillator, which sets the fly back timing. The fly back pulse is compared to the incoming sync pulse and difference voltage, hold the oscillator at the sync frequency.

Vertical Output

The vertical deflection function is operated in the chip IC501 TDA4856 and IC401 TDA4866 which mainly contains the oscillator, ramp generator, power output amplifier and fly-back generator. The vertical oscillator is obtained by means of integrator driven by oscillation circuit that is determined by pin 22, 23, 24 of IC501(C516, C517 and R520). The vertical sync signal is applied to pin14 of IC501 through R507.Once the sync signal synchronized a clock pulse is generated inside this chip. The clock pulse is just as a sync input of ramp generator. A liner voltage ramp is produced at pin 12, 13 of IC501 and coupled to IC401 pin1, 2 for vertical out put amplitude. The vertical output amplitude is controlled by pin18,19 of IC501.

The component of IC401 TDA4866 provides a high CMRR current driven differential input pin1, 2, two output stage pin 4, 6 in full bridge configuration, a fly back generator, a protection circuit for the output stage and a ground circuit.

The pin4 and pin6 are the output of the power amplifier and it drives the yoke by a current driven in opposite phase current ramp. The damping function is composed of R406 and series network R407,C406 used to stabilized the power amplifier. Pin3 is the supply voltage 14.5 volts, pin7 is the fly back supply voltage,pin8 is the guard output, which provide a blanking signal for the G1. Pin9 is the feedback input.

Horizontal Driver

The horizontal output driver is come from the pin8 (HDRV) of IC501 is applied to the gate of driver transistor Q506. For the horizontal deflection circuit, the horizontal output transistor Q507 conducts about eleven amperes of horizontal output transformer (FBT) primary current and deflection yoke current.

This transistor has as low as 5-8 to supply the high base current, a horizontal output transistor drive transformer is used. The drive transformer T501 builds up energy during the on time of the drive transistor Q506. Which is the off time of the horizontal output transistor Q507, the capacitor C524 and resistor R542 compose of damping network which is to reduce the leakage flux of T501 during turn off. The collector conducts the 1250 volts primary fly-back pulse that is measured by special equipment. A linear ramp current is produced in the horizontal yoke by the conduction of the horizontal output transistor Q507(retrace time). The high voltage pulse achieves a fast reverse current (retrace time), it is to follows the turn – off of the horizontal output transistor. This pulse is due to the inductive action of the yoke and FBT.

The diode modulator controls the horizontal yoke current, which affects the horizontal size. This is accomplished by taking advantage of diode storage time which depends on the forward current in the diode just before the voltage reverse at the start of the fly - back time. In effect, the diode shorts out the horizontal width coil to extent of the diode forward current during the previous horizontal trace time. The current used to control the diode storage time comes from the diode modulator and is controlled by the control circuit and the switching mode drive.

The horizontal size control voltage from the remote control unit by IC502 procession is applied directly to the Q515 as to drive the Q514 to control horizontal size.

All of the D516 and D517 are the diode modulator diode and the forward current, which determines the turn on delay of the GND referenced node of the horizontal, turned circuit. To increase the current of D516 and D517 produces a greater delay in the GND referenced node and reduce the amplitude of the fly-back pulse at this node, which results in an increase for the horizontal size.

The capacitor of C525 and C526 are the primary horizontal tuning capacitors and must be specified value for proper operation of the monitor. As capacitor C526 is the diode modulator horizontal tuning capacitor.

The diode D516 clamps the GND referenced node voltage to GND. The coil of horizontal linearity of L503 and L504 are store energy from the fly-back pulse and inject it into the horizontal yoke in the reverse

direction of yoke current. To increase deflection at the start of trace to balance the decrease deflection at end of the horizontal trace due to I^2R loss in the yoke during trace time. The capacitor C505 keep the coil linearity from ringing after retrace. As raster may be shifted due to the electron gun landing, the dc current to pass to the yoke return.

The main function of the fly-back transformer (F.B.T.) is to generate 26K volts potential for the anode of the picture tube. This voltage time of the beam current is the power that lights up phosphor on the face of the picture tube. It also supplies focus and screen grid voltage which are top of the E.H.T. supply. The secondary of F.B.T. provide many low voltage, one of negative voltage which provides the filament current for the grid 1, another supply the horizontal pulse for the X – Ray protection and PLL, the other one provides the 850Vdc source for dynamic focus amplify.

Switching Mode Power Supply

The EMI filter circuit composed of C901, C902, C933, C9B1, C910, C911, FL901 and FL902 functions to eliminate noise from the switching power supply. The resister of NTH901 cascaded in series to the power FET that is prevented excess inrush current when the unit is power on.

To make the SMPS universal, it is designed to operate from 100Vac to 240Vac for the full wave rectified by the D901, D902, D903, D904 and C907. As Q903, Q904, Q905 and ZD902 are supply the power supply start current and the final dc voltage is applied to the pin8 of T901.

The power FET of Q901 works together with power transformer of T901 that is an inductor for the series switch mode regulation. The resistor of R923, R924, are provide a means for sensing the power FET current. As to the current snubber circuit is composed of D906, R903 and C908 which are reduce power supply electrical noise.

The PWM controller of IC902 is used to accomplish regulation by mean of pulse width modulation. The first cycle is initiated from Q903, Q904, Q905 and ZD902 when the pin7 VCC of the IC902 is supplied, the oscillator wave form is produced by the charge capacitor with a constant current set by the resistor of R926 to 5 volts of pin4 of IC902. The output pin6 of IC902 is applied to the Q901 for switching operate. The secondary winding and tops of the transformer T901, which are used to generate the output voltage for each one of the circuits, power supply. A +12 volts regulator is used to supply current to all the control circuit in the monitor. Many of the control circuit are coupled from the +12 volt line with a choke to minimize noise from common current loops. The +5V regulator is used to supply current to micro-processor of IC601.

The over load protection is done by detecting the voltage drop across R924 caused by primary input current when this drop down over 1volt. The duty cycle at pin3 of IC902 is reduced, the output voltage will drop. The IC902 will reset automatically when this aux. Power drops below 10 volts and forces to output to 0 volt. The feedback current on R921 will automatically restart the power after cut off. When this happen you may here a high- pitch noise and the power indicator LED flashing. For the H-sync range from 30kHz to 96KHz, the B plus voltage will need to be changed with H-sync wide range frequency. There is a step up power supply is designed to satisfy this requirement. The IC501 and Q951 consist of the

PWM circuit. The sync signal is come from horizontal output stage. This circuit can achieve the B plus voltage following the horizontal sync frequency linearity.

Power Saving Function

The power saving circuit consists of IC903, Q973A this circuit will cut down the power supply to meet Nutek VESA , EPA energy start and E2000 regulation when the power saving is operate. Normally, the control signals standby pin and off – mode pin of IC601 are operated at active low state. If the system in power saving state, theIC903,Q973A are turn ON by the control signal standby pin and off – mode pin of IC601 which is cut down the power supply current and make the power supply system into the suspend or OFF mode function.

H-SYNC	V-SYNC	STAND-BY,SUSPEND	OFF MODE	LED
1	1	L	H	GREEN
0	1	H	H	ORANGE
1	0	H	H	ORANGE
0	0	H	L	FLASH ORANGE

The power saving function should be operated on the normal situation when the synchronization signal have input to the micro- processor and the signal cable should be plug into the PC system.

Degaussing

The degaussing circuit is connected to the AC line, there is a symbol PTH901 is used to allow a large current to flow in the coil degaussing on power up. This current is than gradually reduced the increased temperature of the positive temperature coefficient of thermal resistor in the position. A relay is used to turn on the degaussing coil when the degaussing operated. This greatly reduces residual current in the coil degaussing.

Over load protection

The over load protection circuit consists of Q910, D914, ZD904, R935, C926 and R936. In the abnormal case of component shorted or opened at secondly circuit the power wattage and PIN1 of IC902 voltage will increasing until the voltage over than 0.6 V at gate of Q910. The over load protection circuit will active.

Over voltage protection

The over voltage protection circuit consists of ZD903, R937 and Q910. In the abnormal case of feedback system problem, the output voltage will be increase and out of control until voltage of PIN8 of T901 over than 18.6V or voltage at gate of Q901 over than 0.6V. The over voltage protection circuit active.

Dynamic Focus Circuit
The dynamic parabola signal come from pin32 of IC501 and amplifier by Q501A,Q5o3A ,Q504A,Q505A,Then direct to focus pin of FBT and enter CRT.

PFC Circuit
IC901 PIN7 output pwm to Q9A2 driver FL9A1,FL9A1 pin 8 feedback B+volt to IC901 PIN 8 ,FL9A1 PIN4 output pwm voltage to D905 Adjust C907 keep 400v Voltage

Raster Center Circuit
This circuit contain Q508,Q509,VR501 ect adjust VR501 you con move the raster Horizontally to the picture center.

C.S CIRCUIT
IC601 PIN 22,21,20,19 output to Q500,Q501,Q502,Q513 ON/OFF,Driver Q510,Q511 Q512,RL501 ON or OFF

FREQUENCY	224PF	CS0 (104PF)	CS1 (204PF)	CS2 (474PF)	CS3 (105PF)
30~33KHZ	1	1	1	1	0
33~36.5KHZ	1	0	0	1	0
36.5~40KHZ	1	1	0	0	0
40~44.5KHZ	1	0	0	0	0
44.5~49KHZ	1	0	1	1	1
49~59KHZ	1	0	0	1	1
59~62KHZ	1	1	1	0	1
62~70KHZ	1	0	1	0	1
70~76.5KHZ	1	1	0	0	1
76.5~79.5KHZ	1	1	0	0	1
79.5~83KHZ	1	1	0	0	1
83~90KHZ	1	0	0	0	1
90~92KHZ	1	0	0	0	1
92~94KHZ	1	0	0	0	1
94~99KHZ	1	0	0	0	1
99~105KHZ	1	0	0	0	1

Alignment for 19" series

1. Precaution

a. To avoid electrical shock, take care not to touch The DY conductors or push against the anode cap.
b. Always keep one hand free to avoid making a complete electrical circuit.
c. Minimum 20 minutes is required to warm up the monitor and the CRT faces should be eastern.
d. All of the alignment are made by 1280X 1024 / 85Hz for the standard of VGA mode unless otherwise specified.

2. Instrument

a. Chroma2250 signal generator
b. Acrylic test bezel fixture for 19" suitable.
c. Miniature flat screw driver
d. Color analyzer (MinlotaCA100 or Chroma7100)
e. Convergence gauge
f. Digital multi-meter
g. External degaussing coil

3. Pretest Mode

	Mode		Resolution
1	VESA	31.5KHZ	720 X 400 / 70Hz
2	VESA	31.5KHZ	640 X 480 / 60Hz
3	VESA	37.5KHZ	640 X 480 / 75Hz
4	VESA	46.9KHZ	800 X 600 / 75Hz
5	VESA	53.7KHZ	800 X 600 / 85Hz
6	VESA	60.0KHZ	1024 X 768 /75Hz
7	VESA	68.7KHZ	1024 X 768 / 85Hz
8	VESA	80.7KHZ	1024 X 768 / 100Hz
9	VESA	79.9KHZ	1280 X 1024 / 75Hz
10	VESA	91.1KHZ	1280X1024 / 100Hz
11	VESA	93.7KHZ	1600 X 1200 / 85Hz

Presetting Adjustment

1.Set Brightens and Contrast to the maximum position.

2.Set the main board VR (VR501,VR502,VR901) to the mechanical center.

3. Timing Basically ,the timing is set to mode 12 cross-hatch pattern for adjustment .If you will use the other mode ,refer to the Input Signal Timing.

4.Turn on the power switch .Adjust the VR901 to enable that the 47VDC output voltage is in the range of 47 ±0.2VDC. Then check the other four output voltages to see whether they meet the following specifications.

(a) 14.5 VDC (b) 80 VDC (c) 110VDC (d) 7.5 VDC.

5. High Voltage and Brightness Adjustment

(a) Set the Chrome 2250 pattern generator to M12.

(b) Set Brightness and Contrast to the minimum.

(c) Adjust VR502 to get that the anode voltage is 25.8 ±0.2KV

(d) Adjust FBT screen VR to make G2 Voltage=580V.

(e) Set G1 Voltage to make the raster just visible.

6.Phase Adjustment

(a) Press the "Menu" key to enable the OSD window.

(b) Press the "Enter" key to enable the H-phase function.

(c) Adjust Encoder to set video on the middle of screen .

(d) Press the "Menu" key to enable the V-center function .

(e) Adjust Encoder to set video on the middle of screen.

7. Focus Adjustment

(a) Set the Chroma 2250 pattern generator to 91.IKHz / 85Hz crosshatch pattern.

(b) Adjust the FBT Focus VR1 and VR2 to make that the corners and center look very clear.

8. High Voltage Protection Circuit

(a) Set the chrome 2250 pattern generator to 93.7 KHz

(b) Set the Brightness and Contrast to the minimum position.

(c) Adjust VR502 to let anode voltage be over 28.5KV ± 1.5KV. Check that the high voltage protection circuit can operate when the high voltage is in the range of 27.0 KV~ 30KV.

(d) Turn the power off. Re-adjust VR502 to the original position.

(e) Turn the power on. Re-adjust VR502 to enable that anode voltage is in the range of 25.8KV±0.2 kV

Final adjustment

1. Check the high voltage protection function.

(a) Set the Chroma2250 pattern generator to 93.7KHz.

(b) Adjust VR502 until the anode voltage reaches 28.5KV ± 1.5KV. Confirm that the high voltage protection circuit can operate to enable that the anode is under 0.1KV. Turn the power off.

(c) Re-adjust VR502 to the original position. Then turn the power on.

(d) Re-adjust VR502 to enable that the anode voltage is in the range of 25.8V ± 0.2KV.

2. Raster White Balance Adjustment

(a) Warm up the unit about 30 minutes. Degauss the CRT screen, using the external degaussing coil.

(b) Set the Chroma2250 pattern generator to M12.(without video pattern)

(c) Set the Brightness to the maximum and the Contrast to the minimum by OSD control. Adjust the Screen VR to make G2 =580 ± 5V then adjust Sub Brightness (OSD Service Menu G1 ICON) to make background brightness =0.5FL±0.2FL

(d) Enter the OSD function, and adjust the raster color temperature ICON to the following default values.
x = 0.283 ±0.010 , y = 0.297 ±0.010

(e) Re-adjust Screen VR to get the Brightness(Y) 0.3 ~ 0.9 FL Check x and y values.
x = 0.283 ±0.010 , y = 0.297 ± 0.010

3. Video White Balance Adjustment

(a) Set the Contrast to the maximum and the Brightness to the maximum.

(b) Set the Chroma2250 pattern generator to mode 12 pattern 70x70mm^2 window white pattern.

(c) Adjust Video gain of red to get Y= 11 F L. ±1 F. L.(window red pattern)

(d) Adjust Video gain of blue to get X=0.283 ±0.010 adjust Video gain of green to y=0.297 ±0.010 , 50 < Y < 60 FL.

(e) Set the Chroma2250 pattern generator to mode12 pattern 41 full white pattern.

(f) Enter the OSD pattern : select "ABL ADJUST " ICON and adjust using Encoder to make Y= 32~36FL.

(g) Check the white color temperature and color tracking to get the following values:
x= 0.283 ±0.015 , y= 0.297 ±0.015
Y= 5~MAX. FL.

4. Size Range: adjust the picture size of each mode to get H= 350 +/- 4mm and V=262 +/- 4mm

5.Horizontal and Vertical Linearity

(a) Use cross-hatch pattern and set timing from M1 to M22. Check that the horizontal and vertical linearity must meet the following specification:

Horizontal Linearity ≤5%

$$\left| \frac{Xmax - Xmin}{Xmax + Xmin} \right| \times 100\%$$

Vertical Linearity ≤5%

$$\left| \frac{Ymax - Ymin}{Ymax + Ymin} \right| \times 100\%$$

6. Focus Adjustment

(a) Change timing to M17 (full white pattern) Set the brightness to let the raster just disappears. Then set the contrast to get the luminance 20FL.

(b) Change pattern to crosshatch.

(c) Turn the Focus1 , Focus2 knob of FBT to let that the crosshatch at center and four corners of the screen look very clear.

7. Convergence Adjustment

(a) Switch timing to M3 cross-hatch pattern.

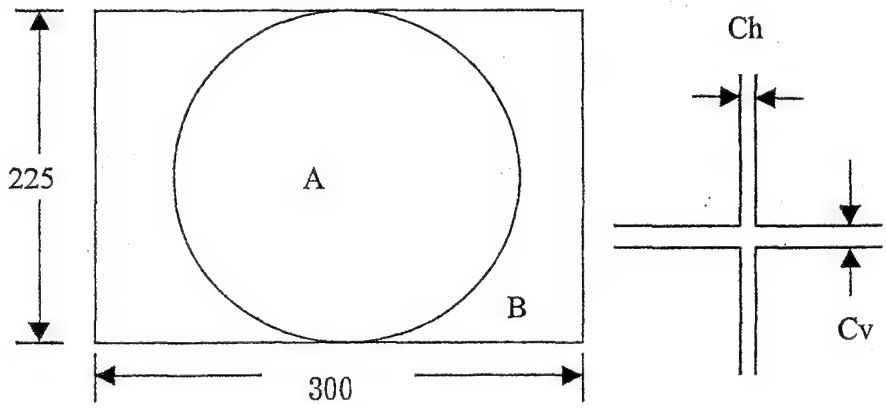
(b) Adjust the H-Size and V-Size to get the display size 350mm x 262mm.

(c) Set the brightness to let the raster just disappears.

(d) Switch pattern from cross-hatch to full white pattern. Then turn the Contrast to get luminance 20 FL.

(e) Switch pattern to cross-hatch pattern. Adjust CRT magnetic ring in compliance with the following convergence specifications

A:0.30mm , B:0.40mm , Cs $\leq$ 0.5mm



Ch: Horizontal Mission Cv : Vertical

$$Cs = \sqrt{Ch^2 + Cv^2}$$

8. High Voltage Regulation

(a) Change timing to M12 Black and White pattern.

(b) Set the brightness to just cutoff and Contrast to the luminance 30FL.

(c) Check that the horizontal and vertical size variation must be less than 3mm.

(d) Change pattern to full white pattern.

(e) Set the brightness and contrast form the maximum luminance position to the minimum.

(f) Check if the horizontal and vertical size variation is less than 3 mm.

9. PnP DDC1→DDC2B

(a)Start the test with a test floppy.

(b)Insert the floppy into "A" drive.

(c)Key in "106065"

(d)Press "N" Key to start the test. Press "R" Key to end the test.

(e)The test will be initialized in the following sequence:

1.DDC1 communication test

2.DDC2B communication test

(f)When the communication test terminates, the following message will be shown on the right of the screen.

[ITEMS]

DDC1Data check O.K.

DDC2B data check O.K.

10. Enter Service function

(a) Press "Menu" Key at first.

(b) Choose (i) function by Encoder.

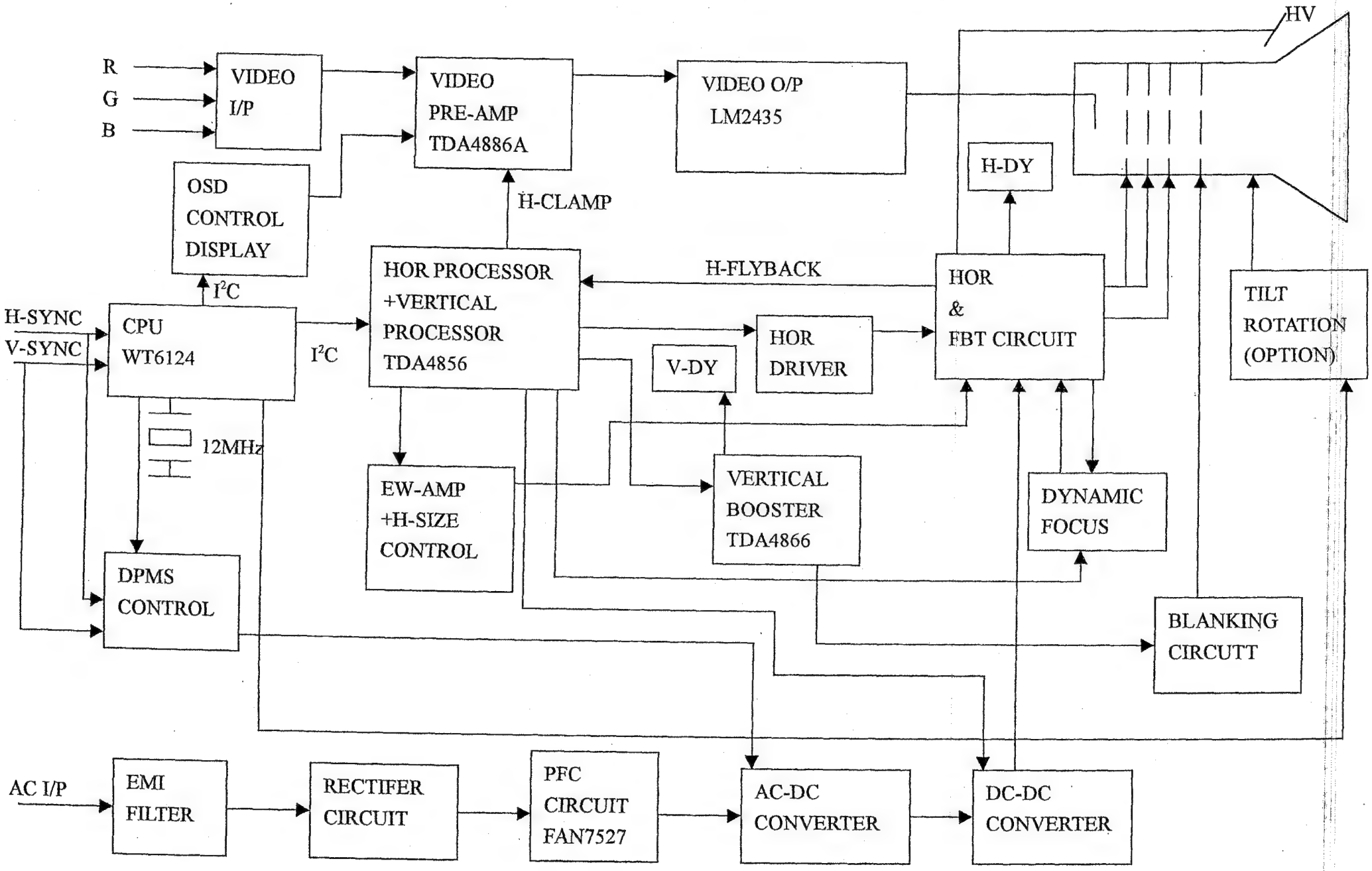
(c) Press "Enter" Key and hold on for about 7 seconds.

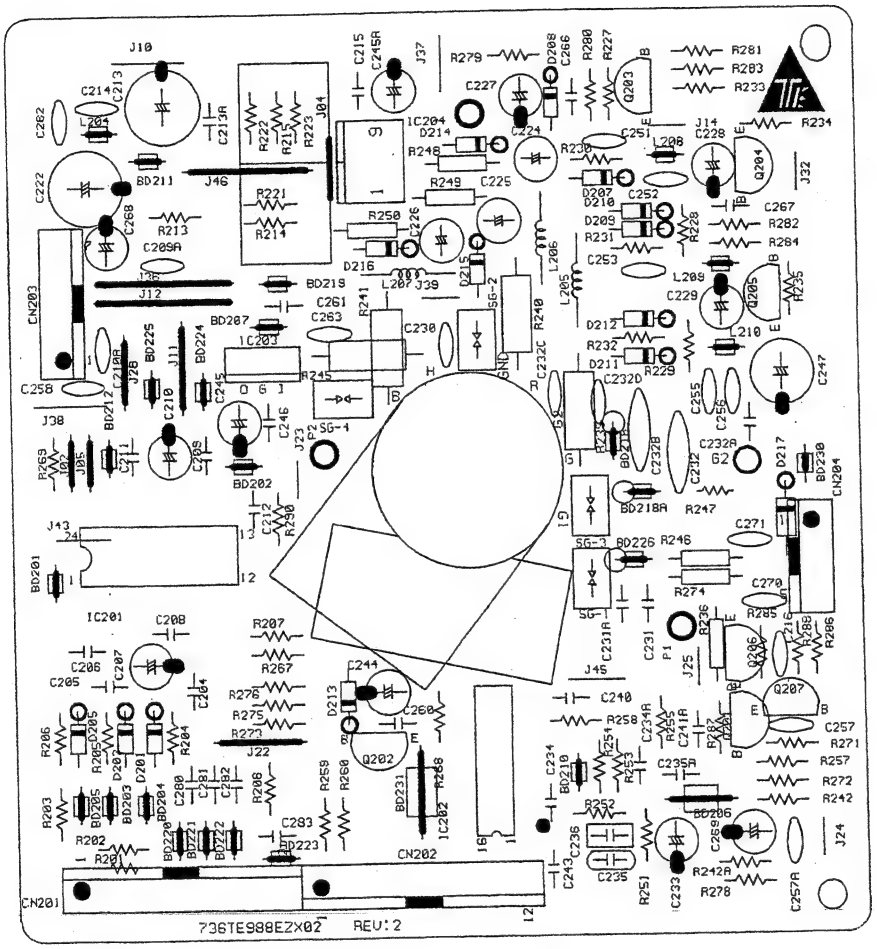
(d) Window will change to Service Manual pattern.

Troubleshooting

No screen	Power LED no light	Check power switch Check power cord Check fuse Check Q901 Check IC902	
	Power LED appear orange or Flash orange	Check H-Sync & V-Sync, Signal cable, IC601, IC903 Q973A	
	Power LED appear green	No anode voltage or X- ray protection	Check Q507, FBT,IC501,Q521, Q951,Q506,Q956A,Q973A,IC952A ,D957,R960
		R,G,B Gun no signal	Check CRT,IC204,IC201,IC202, 80V, 110V,
		G1 voltage < -180 V	Check IC401,Q519,Q517,Q516,
H-Size NG	H-size too large or small	Check IC501, IC502, Q515, Q514, IC602, IC601#36, P.S. IC602 must down load initial data before insert.	

(106065) BLOCK DIAGRAM




736TE988EZX02 REV:2

NOTE: 1. THE UNIT OF RESISTANCE "OHM" IS OMITTED (K=1000 OHMS AND M=1MEG OHMS)
2. THE RESISTOR ARE "1/6W" AND 5% UNLESS OTHERWISE NOTED.
3. ALL CAPACITORS RATING ARE "50V" UNLESS OTHERWISE NOTED.
4. ALL ELEC CAPACITORS TEMPERATURE RATING ARE "85° C" UNLESS OTHERWISE NOTED." ° C" NOTED BY "D".

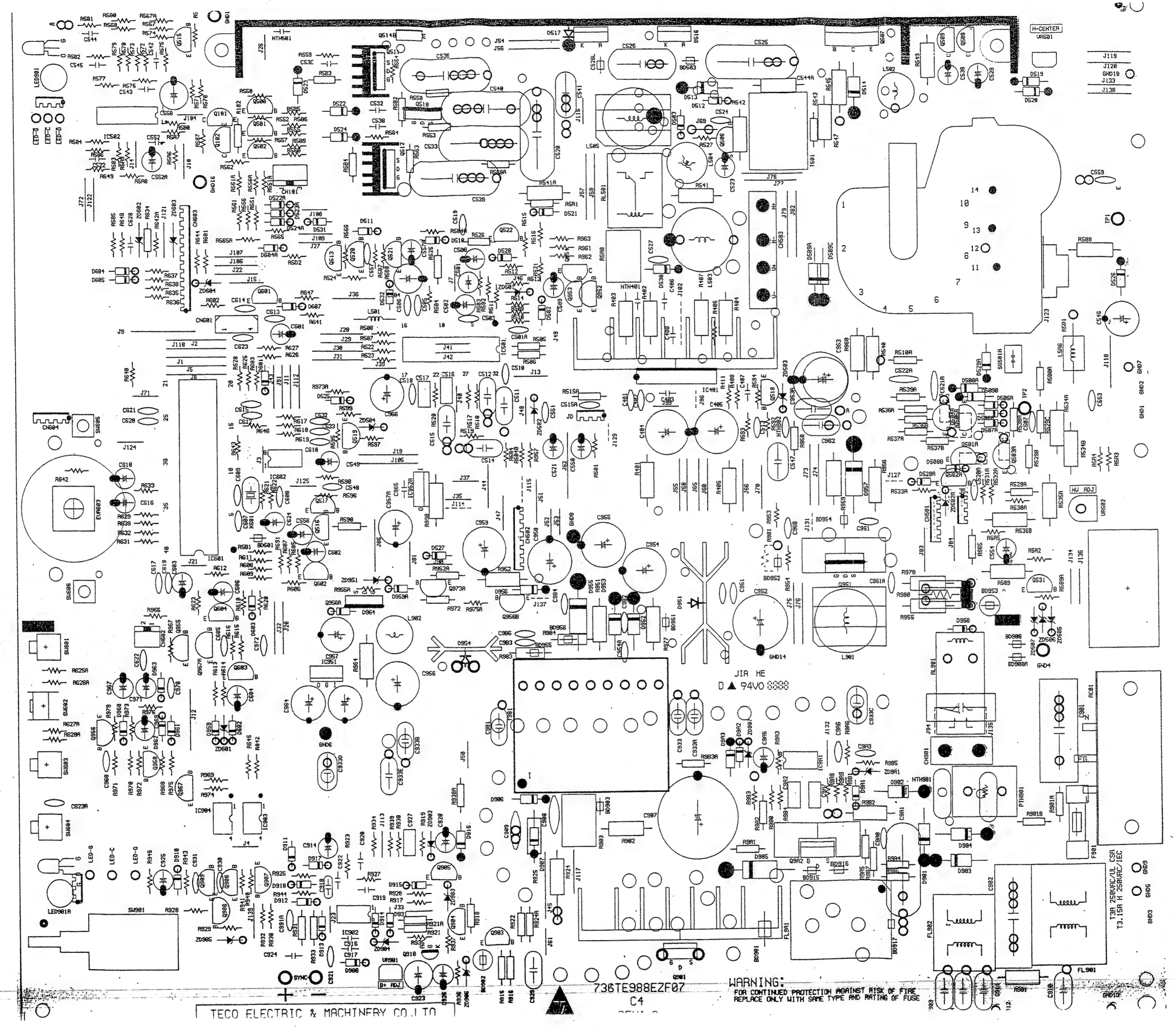
REV	E/C NO.	DATE	REV	E/C NO.	DATE	REV	E/C NO.	DATE
0		02 . 16 . 2001"			. .			. .
1		02 . 16 . 2001"			. .			. .
		. .			. .			. .

APPROVED		03 . 14 . 200
CHECKED	S.H.Chang	03 . 14 . 200
DESIGN		03 . 14 . 200
DRAWN	吳振興	03 . 05 . 2001"

DWG. NAME: VIDEO BOARD

DWG. NO.: 10 60 65

10 60 65


H-CENTER
VR501
H.V ADJ
VR502
SYNC
B+ ADJ
TECO ELECTRIC & MACHINERY CO.,LTD
736TE988EZF07
C4
WARNING:
FOR CONTINUED PROTECTION AGAINST RISK OF FIRE
REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE
T3A 250VAC/UL CSA
T3.15A H 250VAC/IEC
JIA HE
D▲ 94V0

WARNING
REPLACEMENT PARTS WHICH HAVE SPECIAL SAFETY CHARACTERISTICS
ARE INDENTIFIED BY ⚠ SHADING ON THE SCHEMATICS REPLACEMENT
THESE CRITICAL COMPONENTS WITH RECOMMENDED REPLACEMENT PARTS.
DON'T DEGRADE THE SAFETY OF SET THROUGH IMPROPER SERVICING.
CONTROL(S) MARKED * IS PERMANENTLY FROZEN.
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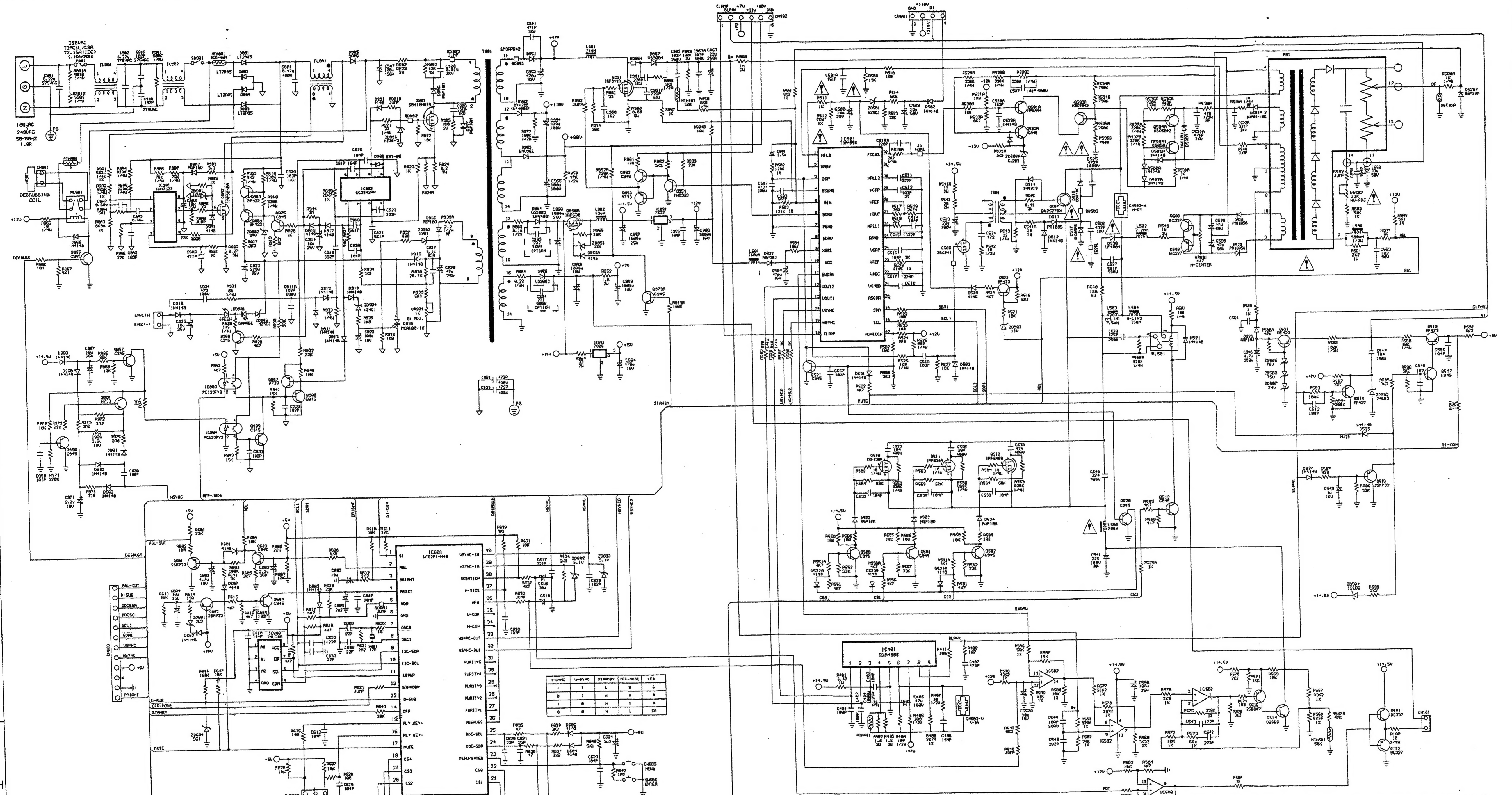

NOTE: 1. THE UNIT OF RESISTANCE "OHM" IS OMITTED (K=1000 OHMS AND M=1MEG OHMS)
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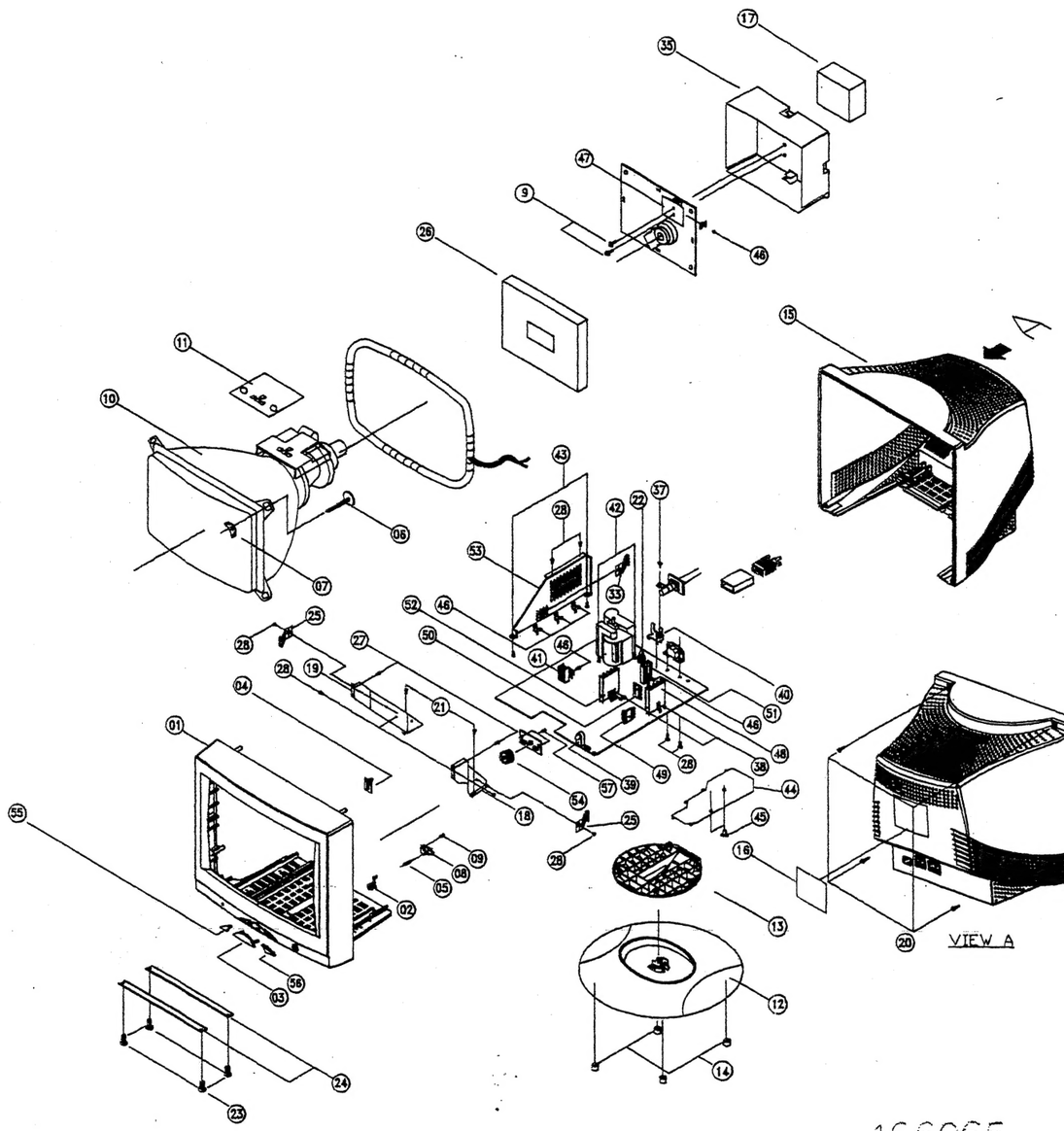
3. ALL CAPACITORS RATING ARE "50V" UNLESS OTHERWISE NOTED.

REV	E/C NO.	DATE	REV	E/C NO.	DATE	REV	E/C NO.	DATE
0		02.16.2001"						
1		03.05.2001"						

APPROVED	Warren Chen	03.14.2001	10 6065
CHECKED	S. H. Chang	03.14.2001	
DESIGN	wfwen	03.14.2001	DWG. NAME: TE988 MAIN PWB (MAX DATA WITH PFC)
DRAWN	WU	03.05.2001"	DWG. NO.: 792TE988EZMF0

圖號	項	件名	件號	材質	尺寸	重量	備註



NO	TITLE	TECO PART NO	QTY	REMARK
01	FRONT PANEL	7021301037310	1	RAL 7035
02	BUTTON-P	7021453012711	1	Ral 71923
03	BUTTON-F	7021453012819	1	Ral 71923
04	LEN-P	7021404017414	1	
05	SPRING	7021874004815	1	
06	SCREW SPECIAL	780XX00216140	4	CRT
07	SUPPORT	7021504016016	4	CRT
08	SUPPORT BUTTON-P	7021403009311	1	RAL 7035
09	SCREW	780PB3009CA00	3	PB 3X8
10	CRT	*	1	
11	SHIELD COPPER	7021513011511	1	
12	BASE	7021402005711	1	
13	SWIVEL	7021402005125	1	
14	RUBBER FOOT	7021614014019	4	
15	BACK COVER	7021310021616	1	RAL7035
16				
17	CUSHION	7021614014825	1	
18	SUPPORT(L)	7021502009021	1	
19	SUPPORT(R)	7021502009128	1	
20	SCREW	780PP4016CB08	4	PP 4X16
21	SCREW	780PB4008CB05	2	
22	PCB HOLDER	7021404011718	1	
23	SPECIAL SCREW	780XX00099241	4	SUPPORT-B
24	SUPPORT(BOT)	7021503013218	2	
25	SPRING	7021874006613	2	
26	SHIELD SHEET	7021513011710	1	
27	SPECIAL SCREW	780XX00206144	2	M4X8
28	SCREW	780PB4008CB05	6	PB 4X8
29	SCREW	780PB3006CA09	2	PB 3X6
30	POLYFOAM(T)	7021811010416	1	
31	POLYFOAM(B)	7021811010513	1	
32	CARTON	7021802081017	1	
33	SPRING	7021874005927	1	
34	PE BAG	7021824004041	1	
35	SHIELD CASE	7021511004132	1	
36	SUPPORT PCB	7021404003715	1	
37	SCREW	780PS4008CB06	1	PS 4X8
38	SCREW	780PG3010CA07	3	PG 3X10
39	LED HOLD	7021404011513	1	
40	SUPPORT SINGAL	7021503013811	1	
41	HEAT SINK	7021524014419	2	Q511&Q512
42	SCREW SPECIAL	780XX00165146	2	
43	SCREW	780PS3008CA01	2	PS 3X8
44	SHIELD TCO	7021513011817	1	
45	SNAP RIVET	7021404016019	2	
46	SCREW	780PG3008CA06	7	PG 3X8
47	HEAT SINK	7021524015512	1	IC204(VIDEO)
48	HEAT SINK	7021523008431	1	Q901
49	HEAT SINK	7021524010910	1	D954
50	HEAT SINK	7021524015211	1	D951
51	HEAT SINK HEAT SINK SCREW	7021524014532 7021524016110 780PS3010CA01	1 1 2	Q951
52	HEAT SINK	7021523008415	1	IC401
53	HEAT SINK	7021522001611	1	Q507
54	KNOB WHEEL	7021454006910	1	
55	DECOR PLATE(L)	7021413004112	1	Ral 71923
56	DECOR PLATE(R)	7021413004210	1	Ral 71923
57	SCREW	780PB3008CA08	2	KNOB WHEEL

1C6065

-C4 EXPLODE DIAGRAM

修更內容 REVISION						
核定 APPROVED BY	楊春枝	03.9.01	比例 SCALE		圖名	10 60 65
審查 REVIEWED BY	毛逸香	03.09.01				
設計 DESIGNED BY	毛逸香	03.09.01	M M		DRAWN NAME	EXPLODE TOTAL ASSEMBLY
製圖 DRAWN BY	許輝雄	02.05.01				
規範 VENDOR					DRAWN NO.	7TE9[illegible]EZ00F0→

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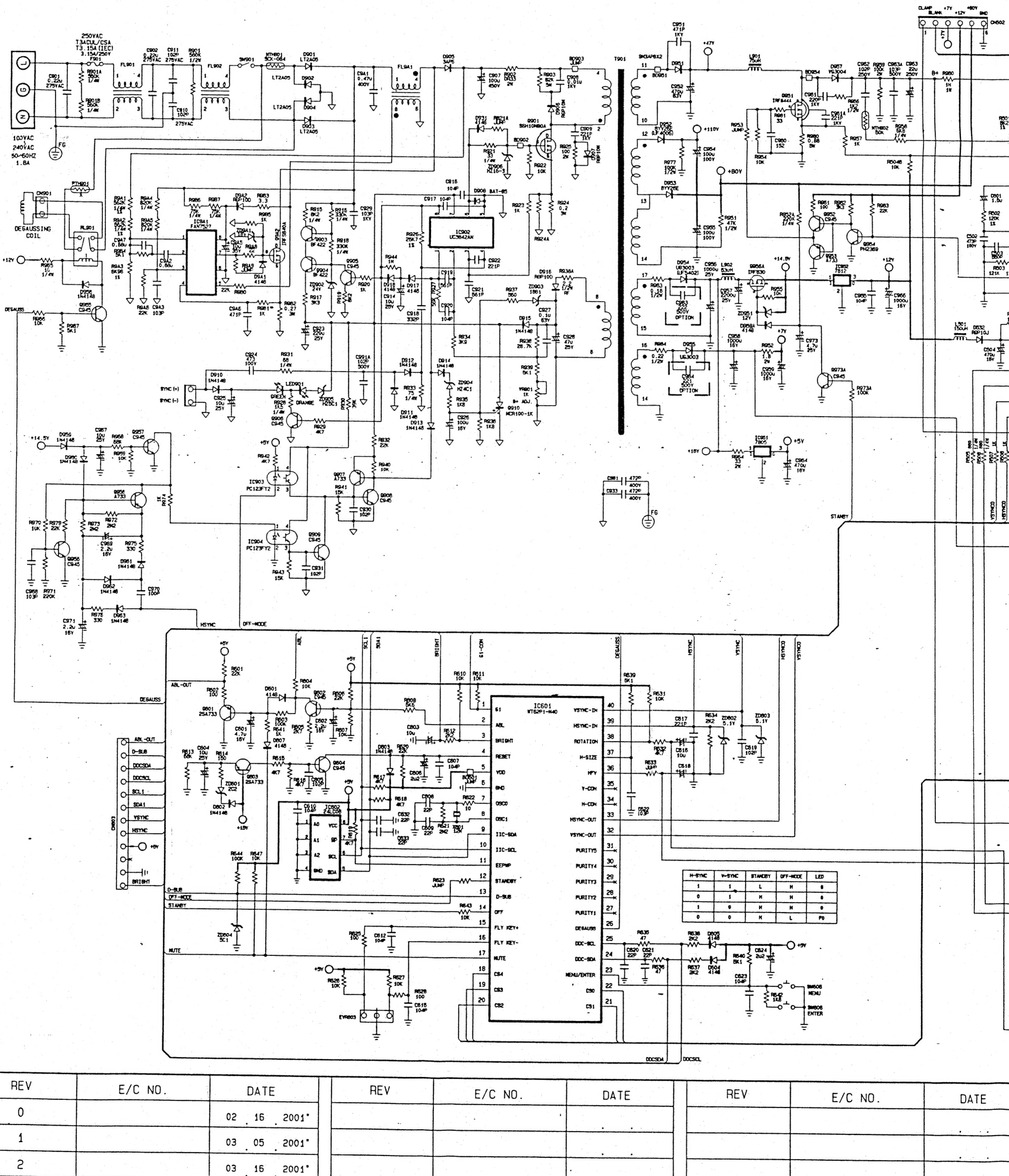

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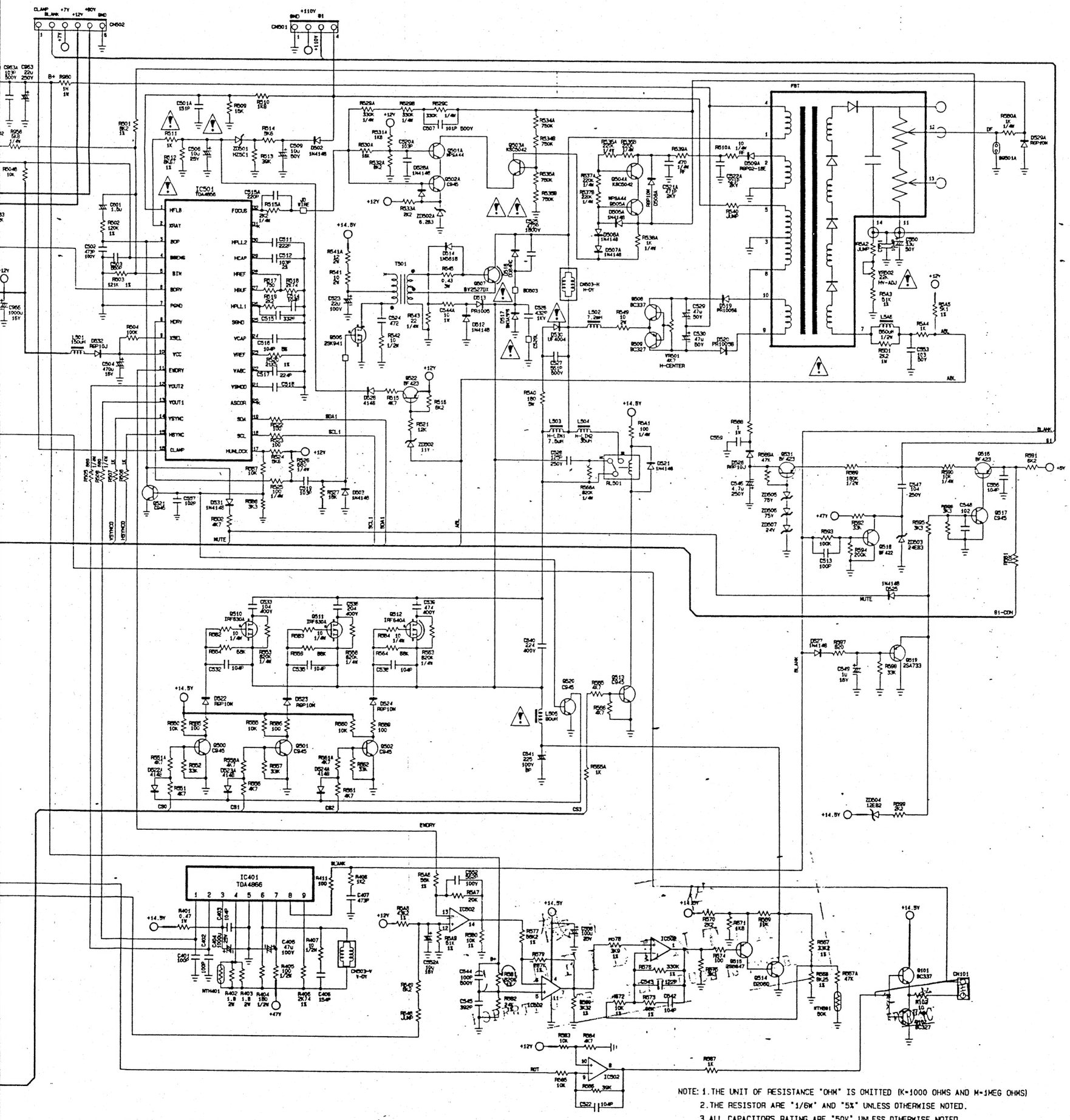

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	DATE						
	. .		APPROVED	[illegible]	16 . Mar . 2001	106065	
	. .		CHECKED	S. L. Chang	03 . 16 . 2001		
	. .		DESIGN	[illegible]	03 . 16 . 2001	DWG. NAME	DWG. NO.
	. .		DRAWN	WU	03 16 2001		